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APPENDICES

Appendix A Experimental Data of Flow Meter Gas Calibration of Brooks 5850E Mass Flow Controllers

1. Hydrogen

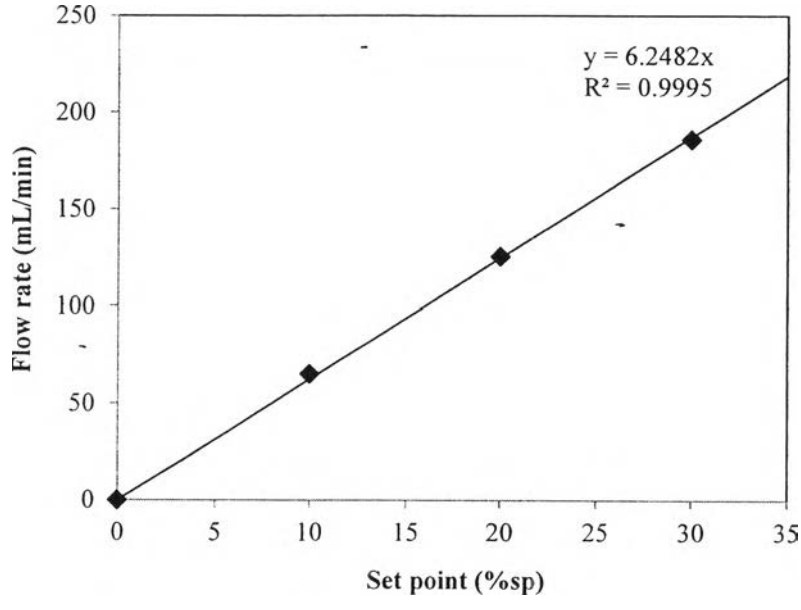

Figure A1 Relationship between set point and hydrogen flow rate.

2. Nitrogen

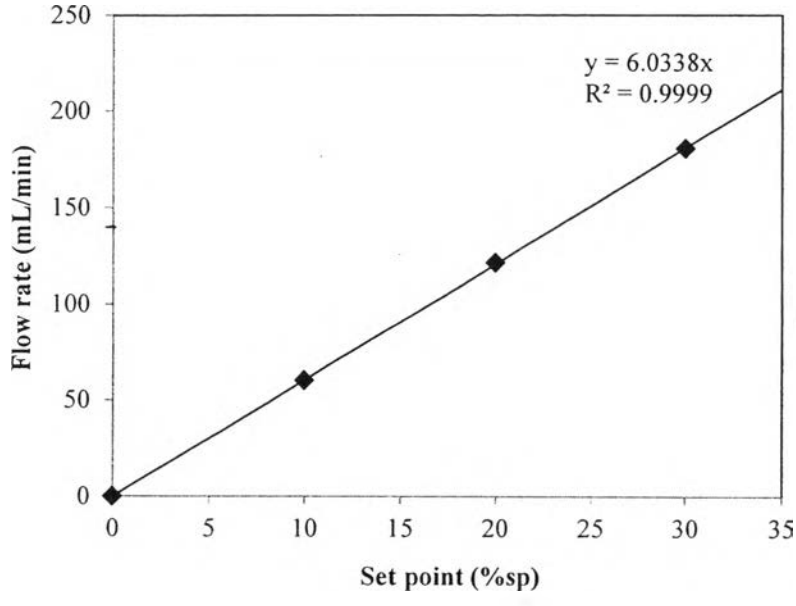

Figure A2 Relationship between set point and nitrogen flow rate.

Appendix B Experimental Data of Flow Meter Liquid Calibration of Eldex HPLC Pump

1. Adiponitrile

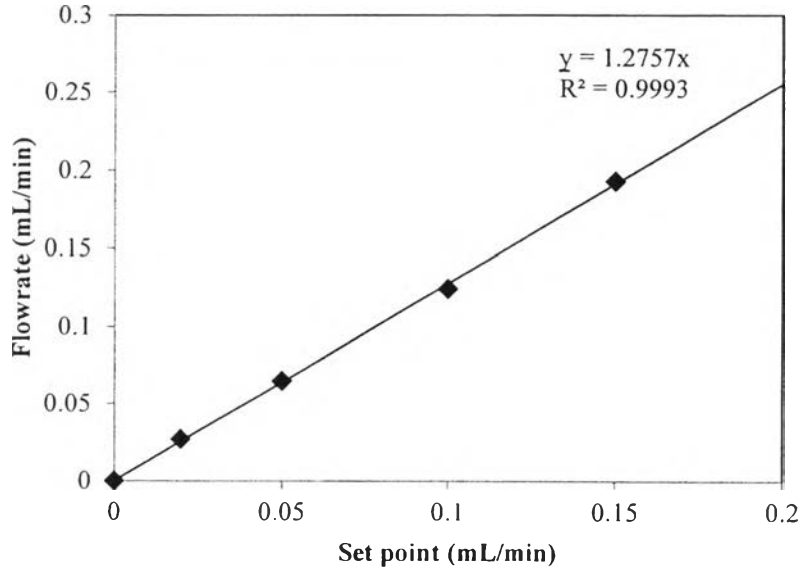

Figure B1 Relationship between set point and liquid adiponitrile flow rate.

Appendix C Experimental Data of Gas Calibration of GC

1. Adiponitrile

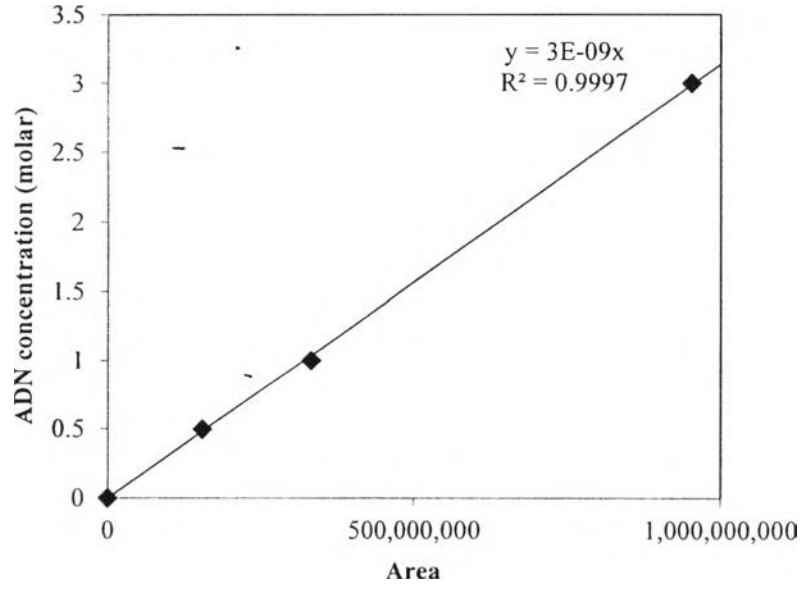

Figure C1 Relationship between GC area and ADN concentration.

2. Hexamethylenediamine

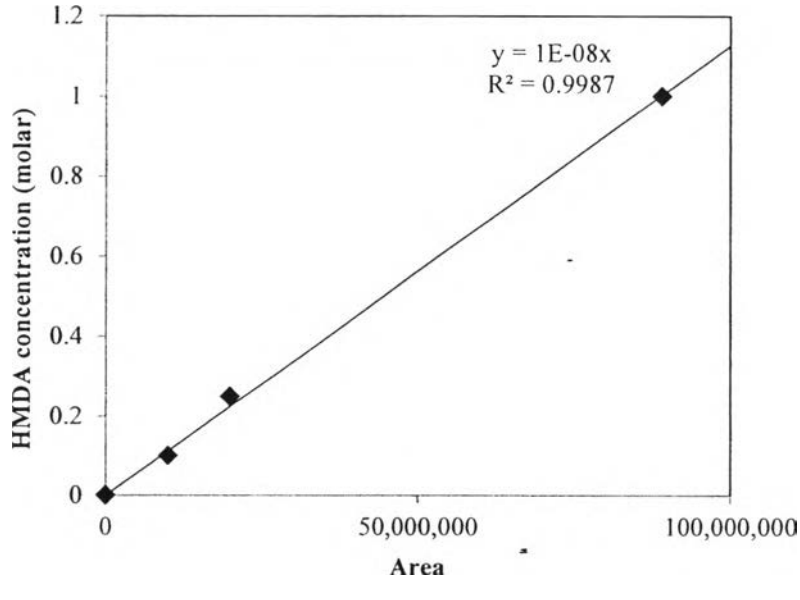

Figure C2 Relationship between GC area and HMDA concentration.

3. Aminohexanenitrile

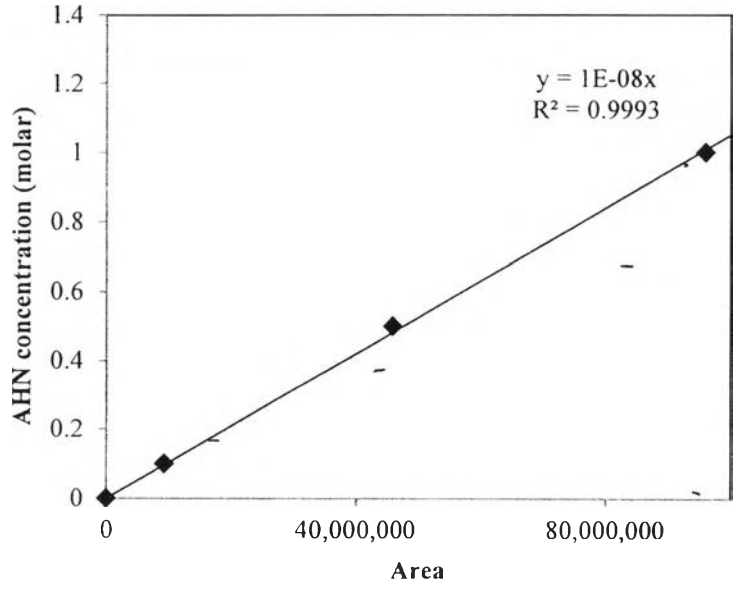

Figure C3 Relationship between GC area and AHN concentration.

4. Hexamethyleneimine

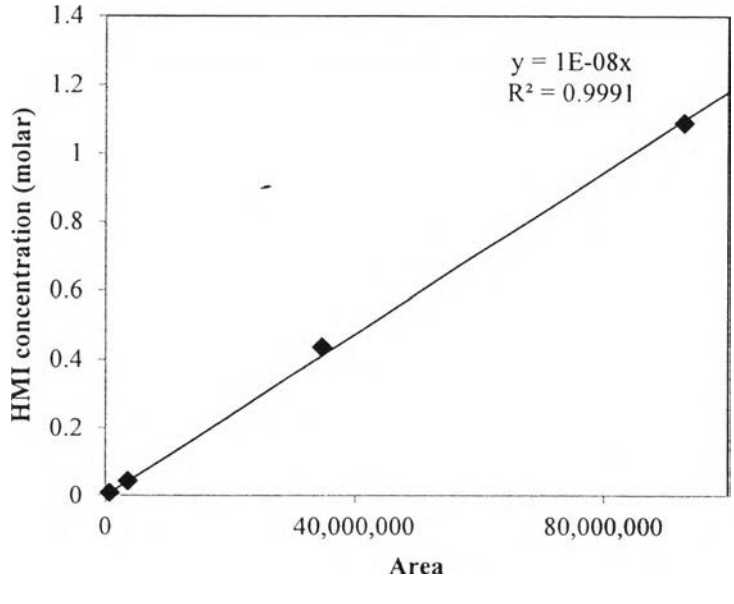

Figure C4 Relationship between GC area and HMI concentration.

Appendix D Experimental Data of Catalytic Activity Testing

Table D1 Catalytic activity testing of $Ni/Ce_{0.75}Z_{0.25}O_2$ and $Ni/Ce_{0.75}Z_{0.15}Mg_{0.20}O_2$

ADN conc. (molar)	Temp (°C)	Ratio (H_2/ADN)	GHSV (h^{-1})	ADN conversion (%)	Selectivity (%)		
					HMDA	AHN	HMI
1	100	120	83925	49.92	0.02	1.09	0.03
1	150	120	83925	30.85	0.10	3.87	0.23
1	200	120	83925	26.83	0.34	10.76	0.28
1	200	50	93368	13.57	1.07	56.90	0.69
1	200	200	93537	40.58	0.05	35.73	0.06
1	200	400	93444	79.89	0.12	0.09	2.62
1	200	50	24100	64.01	0.17	0.63	0.01
1	200	50	47986	31.42	0.83	1.57	0.06
1	200	50	93368	13.57	1.07	56.90	0.69
1*	200	50	93368	17.11	1.19	48.29	0.28

*$Ni/Ce_{0.75}Z_{0.15}Mg_{0.20}O_2$

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